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Preparing the fleet for the F-35B

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Preface

I would like to express my appreciation to my wife Kathleen, whose support has kept me motivated throughout this process and my faculty mentor, Dr. Mark Jacobsen, whose expert advice, tireless assistance, and meticulous editing made this effort possible.

— Ryan B. Colvert

EXECUTIVE SUMMARY

Title: Preparing the fleet for the F-35B

Author: Major Ryan B. Colvert, United States Marine Corps

Thesis: The United States Marine Corps has been successful in its procurement of the next generation of STOVL aircraft. However, the current structure of the support squadrons and policies governing the training of current STOVL aircraft must be altered to promise our next generation of STOVL greater success than its predecessor.

Discussion: The existing training and employment doctrine surrounding legacy VSTOL platforms (AV-8B) have failed to continually or successfully forward base these assets in war-time environment. This is due to a risk-adverse training mindset and poor task organization of the support groups in relation to their standard deployment footprints.

Conclusion: A decentralized Marine Wing Support Squadron to aid in providing realistic training environments (forward based) will enhance the necessary mindset for future VSTOL units. Additionally, a codified acceptance of risk by Marine Aviation would remove the burden from subordinate commanders in attempting to successfully employ forward based tactics. Finally, a training program that spread loads necessary skill sets for servicing VSTOL aircraft across multiple platforms will increase the efficiency and probability of success.

Introduction

When Colonel John Boyd (USAF, Retired) authored his presentation “Organic Design for Command and Control,” one of the slides depicted the “Criteria for command and control.” The elements contained depicted the necessity for insight, vision, focus, direction, adaptability and security. To explain the connection of these points, Colonel Boyd explained “Adaptability implies variety and rapidity. Without variety and rapidity one can neither be unpredictable nor cope with the changing and unforeseen circumstances. Without security one becomes predictable, hence one loses the benefits of the above.”ⁱ The Marine Corps is in the process of procuring another generation of short-takeoff and vertical landing (STOVL) aircraft in an the pursuit of enabling an adaptive aviation force capable of maintaining higher operations tempo. In an effort to prepare the current operational forces for a fleet of aircraft capable of these new weapon systems, the Marine Corps’ existing methods of planning and training must undergo transformation.

Our STOVL Roots

In an effort to analyze how the current USMC STOVL community operates, we can begin with the rationale for the initial procurement of the Harrier. It began as a 1950s British venture known as the Kestrel for a post-nuclear battlefield in Europe devoid of established intact airfields. The aircraft was evaluated by the United States military services during a Tri-Service Testing in July of 1966.ⁱⁱ Testing continued for several years, and the first commitment by the USMC to procure the aircraft for tactical employment would not be until the 1970 Fiscal Year budget. Looking back on the procurement in 1971, some of the initial proponents of the Harrier

program cited Close Air Support (CAS) lessons learned from Vietnam as their motivation for the purchase.

During the Vietnam War, the primary USMC CAS assets were the A-1 Skyraider, A-4 Skyhawk, F-4 Phantom and F-8 Crusader. All these aircraft were designed as carrier-based platforms and therefore relied on extended runway operations, unless field arrest or field assisted catapult operations were available (such as was the case in Chu Lai airfield). Many of these aircraft, such as the A-1 and F-4 were operated by the USAF as shore-based platforms. The perception was that the USMC airfields were over-crowded and therefore runway congestion compromised response times to requesting ground units. Summarizing many of the points, Major General Keith McCutcheon stated that having an aircraft that would “permit operations from more sites, improve response time in CAS...[and be] staged closer to the action, thus cutting flight time.”ⁱⁱⁱ

Our Future and Justification

The replacement to the current USMC STOVL aircraft is the F-35B, one of the three variants of the F-35 intended for use amongst the NATO forces, United States Air Force (F-35A) and United States Navy (F-35C). Only the ‘B’ variant maintains a STOVL capability. However, prolonged controversy surrounding the V-22 has placed the USMC under fire for continually pursuing unique aircraft technical designs not compatible with the other services.^{iv}

Many of the details surrounding the true capabilities of the F-35B are unavailable as the aircraft is still undergoing suitability tests and trials at Patuxent River Naval Air Station. However, some general information is available for open discussion. Some of its attributes are its “stealth” capability, Active Electronically Scanned Array (AESA) radar, and supersonic

speed. Many of these qualities are the result of a multi-service agreement for the development of next generation aircraft. Alone, the USMC has required a STOVL capability for its aircraft. The procurement of the F-35B can be viewed from the practical lens as simply a necessary requirement to replace the aging F/A-18 and AV-8B aircraft. But the USMC still maintains its commitment to STOVL. This defense centers around the belief that additional aircraft capability provides flexibility to the force commander and enables a greater capability to increase sortie generation rates in times of need.^v The increase in sortie generation is based on the operations from forward sites, a similar argument was made in the early 1970s by the “plank holders” of the AV-8B program.

In support of this concept, proponents of the STOVL force cite three examples from the AV-8B history to justify such efficiencies. The first is the utilization of King Abdul Aziz Airstrip in Saudi Arabia. During the first Gulf war in 1991, Harriers initially operated from bases in Bahrain then moved forward to a site referred to as “the Soccer Stadium.” By relocating the squadrons to this forward site, transit times were cut in half without aerial refueling. The second example took place during Operation Iraqi Freedom in 2003. An old Iraqi airstrip at An Numinayah, about 60 miles south of Baghdad, was utilized as a forward arming and refueling point (FARP). This FARP enabled Harriers to stand ground alert (aircraft are armed and ready ready for launch for immediate tasking) and maximize time on station, all without aerial refueling. In 2009, Marine Wing Support Squadron 371 (MWSS-371) constructed Forward Operating Base Dwyer (FOB Dwyer) in Afghanistan, an effort that required several months of construction due to the remote location of the airstrip, which was built for both fixed-wing and rotary-wing aircraft. Due to the lack of any taxiways, tactical fixed-wing operations were postponed until 2010.^{vi} In the Spring of 2010, USMC AV-8Bs utilized FOB Dwyer as a FARP

while supporting offensive operations in Marjeh. Yet this campaign resulted in several aircraft requiring engine replacement due to foreign object debris being ingested during these operations.^{vii} One of the key arguments for STOVL in expeditionary settings centers around their ability to take off and land on airfields that are approximately 4,000 feet in length, serving as FARPs to both rotary-wing and fixed-wing STOVL airframes.

Opponents of STOVL

In order to develop a suitable climate for the future of STOVL operations, we should examine the concerns of its opponents. The two most well known critiques are the four part series titled “The Vertical Vision” which appeared in the Los Angeles Times in 2002^{viii}, and an article by a former Navy student of the Marine Corps Command and Staff College titled “Hovering at a precipice” in the Armed Forces Journal in August of 2010.^{ix} In both cases, many of the arguments against STOVL center on the failures of the AV-8B program and the initial shortfalls of the V-22 program. These analogies are powerful rhetorically but sometimes misleading. Therefore, examination of these points for analysis in development of a more successful STOVL culture is crucial.

The most common attack on the AV-8B program concern the aircraft’s safety record. Since the aircraft’s acceptance in the Marine Corps, 46 aviators have been killed operating both the AV-8A and the follow-on AV-8B.^x Most commonly, the AV-8A required higher-than-normal pilot workload due to its lack of control augmentations. These augmentations connected roll and yaw interconnects which in turn “coordinated” turns between aileron and rudder thereby reducing the risk of aerodynamic “departure from flight” at low speeds. Unique aerodynamic requirements of the initial variant, coupled with an evolving training pipeline that altered the pre-

requisites for admission into the Harrier program during the 1970s from an experienced fixed-wing background to both rotary-wing and “new joins,”^{xi} led to an unusually high number of mishaps categorizing the airplane as the “widow maker.”^{xii} The follow-on variant, the AV-8B corrected many of the problems with the AV-8A ranging from wing design to inclusion of control augmentation. However, of the many upgrades to the aircraft, a new engine design proved fatal during the 1990s due to negligence at the Naval Aviation Depot during engine reconstruction. This was the case with the engine bearing problem of the mid to late 1990s, leading to extended periods of restricted service. Despite the repair of these malfunctions, the discredit to the Harrier program, and STOVL in general, is difficult to overcome with “a newer variant.”

Another attack angle on both the performance of the AV-8B and the logic of forward basing F-35Bs is based on the logistical requirements to sustain operations ashore. The argument centers on the idea that placing “5th generation” stealth aircraft near the front lines is impractical due to the probability of damage by enemy action. The ever increasing cost of the F-35B only adds fuel to this argument. Combating these arguments is difficult as they seem plausible. However, embracing the reality these aircraft are potential “national assets” in terms of potential tactical and intelligence capabilities is extremely valuable when assessing them and their future. Future weapon systems may require new employment doctrine, and prove existing critiques invalid.

The Current Operating Structure

The USMC maintains seven Marine Attack Squadrons with an allotment of 14 aircraft each in order to support seven Marine Expeditionary Units (MEUs) and to serve additional

support of the Global War on Terror in Afghanistan. The MEU detachment consists of six aircraft and nine pilots with an accompanying maintenance detachment. While recent deployments to Iraq and Afghanistan consisted of a reinforced Squadron minus (10 aircraft and approximately 17 pilots). Neither force contains the aircraft, personnel or pilots to provide round-the-clock coverage based on sortie generation rates required.^{xiii} A typical squadron is capable of providing, at most, 14 to 16 hours of continuous coverage for a specified period of time. The number of sorties required to provide 24 hour coverage, rapidly exceeds the availability of airframes and capable aircrews by any individual squadron.

The MEU detachment maintains its complement of AV-8Bs (six aircraft, nine pilots) as an augmenting force of offensive air support assets between both AH-1 and UH-1 aircraft, all in support of the Battalion Landing Team (GCE of the MEU). Ashore operations by a currently sized MEU detachment could provide minimal additional capability due to its small number of aircraft. A STOVL MEU detachment is designed to provide four aircraft for combat operations, and provide six to eight hours of coverage. Added capacity could be achieved by not having to observe restrictions unique to Amphibious Shipping where vertical landing performance is required (combat loaded AV-8Bs can only hover with very low fuel states). Lastly, forward basing offers the possibility of reduced transit times depending on the location of the forward operating site. Additionally, the current operating environment of the MEU where AV-8Bs augment offensive weapons (“airborne artillery”), instead of being a “center piece” or deep-strike platform, has led to routine flight hour currency problems resulting in increased mishap rates during afloat operations.^{xiv} These mishaps are often attributed to the unique structure of a “composite” squadron where STOVL aircraft fall under the command of an assault support helicopter squadron commander. The lack of familiarity with the training and proficiency

requirements to maintain a “deep strike” capability often leads to a misguided perception that “flying equals training.” This mentality leads to a degradation in performance by the STOVL aviator and an increased risk for flight-related mishap.

In terms of afloat operations, many have recommended options that range from removing STOVL aircraft from amphibious shipping to making them a “tethered Squadron” shore-based model mirroring that of KC-130J aircraft and the MEU. Such approaches appear to deal with the MEU in its current construct as an Amphibious Readiness Group composed of a standard allotment of amphibious shipping (one each of LHD, LPD and LSD). In a budget constrained future, addressing national tasking through modified task organization would better suit the National Defense Strategy while focusing effort by eliminating replicated force structure.

A final element that must be understood in the explanation of the current operating environment of STOVL aircraft is one of standardized regulations and procedures as they apply to naval aviators in all operating environments. Two of the most prominent works detailing the “rules of the road” are the Naval Air Training and Operating Procedures Standardization (NATOPS) manual for the aircraft and the NATOPS manual for General Flight and Operating Instruction (typically referred to as OPNAV 3710). These two manuals set the framework for the accepted operating environment, planning considerations, and most importantly the accepted procedures for all realms of flight operations (ashore-based, afloat, and from expeditionary sites). The main purpose of these documents is to maximize the safe and effective operations of aircraft through standardization of procedures. Aircraft mishaps resulting from deviating from published procedures typically result in the severe reprimand of the senior aviator involved in the mishap.

The STOVL community finds itself at a difficult cross-roads when examining the best way forward with the next generation of aircraft. Following severe criticism for the less than

optimal safety record of the AV-8B, the STOVL community has had to accept strict operating guidelines to minimize risk and attempt to counter arguments against the safety of STOVL in general. However, any attempt to employ STOVL aircraft to their maximum operating potential would place the aircraft at risk to both the environment and possible enemy attack while failing to take these risks makes STOVL aircraft indistinguishable from their conventional counterparts.

WHAT SHOULD THE USMC DO WITH THE F-35B?

1. Accept Risk

There are inherent risks in the operation of any aircraft. Environmental factors, unforeseen mechanical failures, human error and chance all wreak havoc on the ability to continually operate aircraft without failure. However, as a society we have accepted the relative benefits we have enjoyed from aircraft outweigh those risks. This is demonstrated by the continued use of air travel. Therefore the individual who chooses to enjoy the benefits of aviation is making a calculated risk. What calculated risks should the USMC be considering with its future employment of the next generation of STOVL aircraft?

As described earlier, many of the examples of forward-sites where STOVL was employed consisted of a FARP capability at a tarmac or road approximately 4,000 feet in length. If the USMC re-cast its standard STOVL procedures for such an environment, pilots will be better prepared for such operations.

If added capability truly implies flexibility, then one capability that must be considered is the ability to operate in the maximum envelope of weather conditions. Current requirements of the OPNAV instructions dictate that when flying, any airfield with less than 3000 feet of ceiling and three miles of visibility pilots must have a suitable instrument approach at a designated

alternate airfield. However, in the FOB environment, alternate airfields may not exist, or lack instrumented landing systems for inclement weather. Such restrictions limit or prevent flexibility of STOVL aircraft from operating from these locations. Depending on the surrounding environment, maintaining fuel requirements to divert to suitable alternate airfields could possibly negate the very advantages from operating from such an airfield. Additionally, the requirement for a suitable approach may limit usefulness of the airfield in various poor-weather conditions.

The USMC should consider utilizing a hasty approach system reliant upon the advanced capabilities of the AESA radar. The impressive ground-mapping functions of this radar system can easily provide the pilot with accurate guidance to an intended point of landing without utilizing an established ground-based approach. The alternative is an expeditionary approach system which would require additional logistical consideration and electrical requirements. An AESA enabled capability would not be far fetched as current tactical aviation platforms with older-generation radars can generate detailed ground maps of the runway environment while laying accurate system designations for navigation. Currently, these methods are not approved for use by either the Federal Aviation Administration or the Department of the Navy. In an effort to bolster confidence in future STOVL pilots, the USMC should authorize use of such a procedure in expeditionary environments. This policy should be widely acknowledged and published in an effort to prevent pilots from doubting their authority in such environments.

One aspect common to restricted operating environments, both at sea and ashore, is that not all aircraft emergencies can be handled in accordance with their dictated NATOPS procedures. During afloat operations, many times aviators will operate in what is considered “blue water.” This term implies that due to the location of the ship, that suitable divert fields are

not available for either portions of the sortie, or the entire sortie. A similar freedom should be granted for pilots operating in expeditionary settings.

When suitable alternates are available for portions of the sortie, there is a definitive “commit” point where the pilot will eventually exhaust the fuel supply below a point where the alternate field can be reached. At this point, the aviator considers himself operating “blue water.” This means that the aircraft’s only landing option is the ship.

The term “blue water” is common among aviators but is not specifically referenced in any publications. Only passing reference to “divert fields” is mentioned in portions of the Landing Signal Officer manual in regards to maintaining carrier qualification currency.^{xv} This typically leaves a significant amount of stress on decision makers when pondering options for dealing with in flight emergencies.

The CVN can arrest aircraft in various configurations thus making almost all distressed aircraft conditions survivable. This is not the case with STOVL aircraft operating from amphibious shipping or expeditionary sites. Aircraft emergencies involving engine performance or high wing-load asymmetries significantly restrict the ability of the STOVL aircraft to recover in restricted sites due to existing SOPs that require longer landing facilities in such circumstances.^{xvi} The runway length requirements in these circumstances are only available at shore facilities due to the lack of arresting gear and braking requirements of STOVL aircraft.

Short Takeoff also presents a high risk in restricted sites. Due to the high thrust-to-weight ratio for STOVL aircraft and the speed of acceleration during takeoff, these aircraft have only a limited chance to safely abort the aircraft in the event of aircraft malfunction. Therefore, malfunctions during takeoff cannot be safely aborted prior to departing the improved surface.

The possibility of aircraft malfunction in any of these environments always remain. Risk is the commander's decision to accept, but there is a benefit to codifying these accepted risks into our doctrine. Because the USMC has embraced STOVL aviation for its capability to provide flexible basing options, the service as a whole has embraced this risk in theory but not in practice. Publishing this accepted risk would remove the taboo aspect of laying the matter at the feet of subordinate commanders pondering whether to employ such tactics. If operating STOVL aircraft presents such a high risk as to hold subordinate officers accountable for predictable risks, then why would the service embark on such an acquisition?

2. Support Forward Bases

The USMC is in the process of decentralizing its Marine Wing Support Squadrons from the Marine Wing Support Group (formerly under the direction of the Marine Air Wing) to the Marine Aircraft Group (MAG). The resident expertise to build and support forward based sites lies within these Marine Wing Support Squadrons.^{xvii} The decentralization is a step in the right direction but still implies that the decision to conduct forward based operations is a "MAG-level" decision, one echelon above the deployable unit. Although USMC doctrine endorses decentralized operations (e.g. Marine Corps Doctrinal Publication 1), the current organization design implies that decentralized on behalf of forward-based STOVL remains MAG level or higher. Based on the current environment of deployed units consisting of less than full-complemented squadrons, such a design limits the flexibility of squadron or detachment commanders to consider forward based STOVL operations.

Recent revision to the task organization of the Marine Air Wing to include MWSS units as part of the MAG is an improvement; further incorporation of detachments into direct support

units of STOVL Squadrons or detachments would further enhance the capability of units to plan, train and execute routine forward based STOVL operations.

3. Adopt a Realistic Approach to Scalability

One of the catch phrases of the Marine Air Ground Task Force is “scalability.” The theory is that the subordinate organizations can be changed in size to meet the various needs of the combatant commander. As evinced by operations over the past decade, this is true. However, depth of the battlefield is a matter of logistics and not simply combat power.

One of the limitations in expeditionary operations of a STOVL squadron is its inability to self deploy the maintenance department. Attempting to re-organize a STOVL squadron with road-bound mobility assets would waste resources in this environment, and most of the equipment would remain static as routine operations would not require their employment. The reality is that assault support assets would be required to transport aviation support personnel to designated sites for STOVL operations, either by ground or air.

A ground transport option would rely on an MWSS capability as STOVL squadrons do not contain any organic transportation. Even with a de-centralized MWSS incorporated as detachments to subordinate STOVL squadrons, the MWSS capability to provide full spectrum support of airfield construction, field servicing, security, support and the burden of personnel transport would rapidly exceed a detachment’s capability. Those tasks are assigned to the MWSS as an entire unit, and therefore fragmentation of that unit would rapidly degrade those functions.^{xviii} As mentioned in the case of Afghanistan, a single MWSS took several months to construct an entire airfield. Therefore any realistic expectation of a de-centralized MWSS must match the operational expectations of the STOVL unit they are supporting. Such support is

possible through rigorous mission analysis of the operating environment in terms of the size of STOVL unit assigned.

4. Re-think Maintenance Support

Aviation transport of maintenance personnel is more in tune with how the MAGTF operates in combat environment. Ground based logistic systems provide sustainability while aviation-based systems offer unpredictability. The utilization of assault support aircraft to rapidly deploy personnel and equipment to desired locations supports a doctrine of maneuverability and rapidity not typically associated with ground-centric logistical function. Several of the assault support platforms (KC-130J, CH-53E, and V-22) can operate in austere environments, offering rapid ground refueling and sufficient lift to carry fixed-wing ordnance. These aspects make them far more suitable to the needs of operating STOVL aircraft in a dynamic environment.

If the STOVL community commits to aviation-borne support, it will depend on the smallest unit capable of expeditionary fixed-wing operations, the MEU. The next question to be asked is whether the current construct of the MEU, with six STOVL aircraft, will adequately serve the needs of the combatant commander when fielding the F-35B. If not, then does forward-basing assist in supporting that need, or does the total number of aircraft per STOVL detachment need to be re-considered?

If no additional aircraft, or re-allocation of aircraft to the MEU construct is made, then the manpower of a STOVL MEU detachment can only support limited operations in both sorties and basing flexibility. Maintenance departments for STOVL MEU detachments are carved out of “host” squadrons and therefore can only support limited flight operations for a specified

window, in terms of time and location. This construct assumes a single facility (a ship or FOB) for flight operations and not “dual-site” operations (ship and FOB) as would be required if utilizing a forward site or air-mobile maintenance & expeditionary airfield support.

Assuming no re-design of the manpower tables occur, the most efficient method of improving capability would be cross-training additional aircraft maintenance personnel, regardless of specialization in aircraft, for basic servicing and loading STOVL aircraft. Today, aviation maintenance personnel from ordnance backgrounds are typically rotated through various aircraft throughout their careers, and these individuals could remain qualified on multiple aircraft as the evolutions are procedurally based and the additional qualifications could be facilitated through re-enlistment bonuses or promotion opportunities. At the designated FARP, the only additional service required would be for fueling operations, and this task is not specialized as it is commonly executed by civilian personnel at various airfields across the country. Such design would suit the current force structure.

Task Organize with a Twist

In November 2011, President Obama addressed the military’s top leaders and reoriented the smaller military to focus on the Pacific.^{xix} As mentioned earlier, the current MEU construct has identical force structures (amphibious readiness groups) deploying from the East Coast, West Coast and Japan. One alternative is to alter task organization of Pacific-bound MAGTFs at the expense of those deploying to lower priority regions.

Given the declining Federal Budget, the Navy stands little chance of getting additional amphibious shipping. However the Navy and Marine Corps may achieve results by re-examining task organization. If the President has indicated that the Pacific is the “focus,” then

Pacific-bound MAGTF's should represent a larger force than other regions. The current model of identical MAGTF's does not appear to meet the President's intent, or indicate frugality.

If task organization could allow additional LHA or LHD shipping to both the West Coast and Japan, MEUs could deploy with two LHA/D ships instead of the typical allotment of one. This change would support a full STOVL squadron operating from one LHD, while rotary wing aircraft could operate from the other. Such a design would provide MEU commanders with a greater flexibility in fixed-wing STOVL capability. In addition, forward-based operations would not be limited to the restraints imposed by the current six-plane model and its associated manpower limitations as the full STOVL squadron would be embarked.

Break the Mold in Training

In the AV-8B community, aviation training for forward sites falls under a section in the training and readiness (T&R) manual entitled Forward Based Operations (FBO). Training sorties in the T&R manual are broken down into two sections: Core and Core Plus. These sections are defined by associated mission essential tasks (METs) Core encompasses those skills which are "a list of specified tasks a VMA squadron is designed to perform."^{xx} Whereas core plus skills are "additional METs that are theater specific and/or have a low likelihood of occurrence."^{xxi}

Training for forward based operations assumes the use of short and narrow surfaces for takeoff and landing. Such sites require pilots to perform what is known as a short takeoffs (STO) and Rolling Vertical Landing (RVL). STOs and RVLs are some of the most common forms of takeoff and landings performed by Harrier pilots. However, these procedures are rarely used in combination with restricted sites unless a unit is preparing for deployment.

The implication of having FBOs take place under a Core Plus section of the T&R is that these sorties are perceived by the community as unlikely and riskier than basic sorties. In my opinion, future aircraft should view FBO sorties as core level skill sets and pilots should almost exclusively execute these restricted landings. Such a modification to the T&R would convince the STOVL community to view forward-basing as routine, not as “elevated risk.”

Conclusion

The USMC should be satisfied that a multi-decade quest in the pursuit of an all-STOVL force has been successful in terms of procurement alone. However, many of the sacrifices the service has made in terms of preserving aircraft and minimizing exposure of both the AV-8B and V-22 in terms of forward basing threaten the very existence of our vision of future STOVL operations.

The fear of failure, and a very public one, is at the root cause for many of the decisions to prevent aircraft from operating in the full spectrum of environments they were intended. During the V-22’s initial deployment in support of Operation Iraqi Freedom, the aircraft was the subject of a cover story of Time Magazine entitled “A Flying Shame.” Such press caused significant concern in the USMC’s leadership to attempt and mitigate possible risk in the operation of the aircraft during that deployment. However, the restricted operations led many Marines to question the capability of the aircraft while any “good” done by minimizing exposure to risk was quickly negated by the Marines’ perception that the aircraft was incapable of effective combat operations.

The AV-8B has suffered from a similar history, although most recent attacks on the airframe center on the lack of consistent forward based operations to support replacement by

another generation of STOVL aircraft. The USMC must not mirror the same methods used during the deployment of the V-22 by attempting to mitigate risk through restricted operating envelopes. Instead, the USMC must embrace the risks inherent in STOVL operations and instead mitigate those risks through training and not through severely-limited operations.

Training should not be limited to practice approaches and restricted landing sites. This “play it safe” mentality has led to a compartmentalized view of forward based operations that hampers the development of effective employment doctrine. The current AV-8B fleet are confined to train only at established airfields on Marine facilities. These facilities are effective in their value of exposure to the types of sites a pilot may encounter, but do little in training a STOVL squadron for the logistical effort in employing forward basing in concert with a MAGTF. By selecting austere external environments to train towards, STOVL squadrons would be forced to coordinate with MWSS and adjacent units for the transport of required personnel, equipment and support for effective and limited forward basing. This coordination could lead to refined employment doctrine and “corporate knowledge” surrounding forward basing that is severely lacking in the community even after a decade of combat operations. Site selection should not rely upon any external support outside organic USMC assets. Previous “FOB ops” have typically taken place at locations that already enjoyed contractor support, established air traffic control, existing instrument approaches, and even cell phone access. These sites may “brief well” in terms of safety concerns but demonstrate little value to an organization that intends to fight in remote locales. Even during MAGTF oriented training exercises, like those conducted by Marine Aviation Weapons and Tactics Squadron-1, units are only required to utilize well-established airfields within a few miles of established Marine bases. To date, there is no recurrent training site that requires STOVL units to establish limited flight operations from a

facility not used by general or military aviation assets. Our training must reflect the way we envision ourselves operating in future combat environments, or we will likely repeat the mistakes of the past.

STOVL aircraft will never be concerned with where they are based or where they takeoff and land. They are not afraid of the dark, cross-winds, pitching seas, even enemy fire. Only the personnel who operate them and manage these assets impart personification on the equipment. The move away from effective forward basing has been the result of a long line of sacrifices and procedural changes that our service has made over the years. Many of these decisions may have been correct because of the surrounding variables at that moment in time. However, the slow deviation in course, because of these actions, has placed our STOVL assets in a predicament where their employment is indistinguishable from other aviation platforms. If the USMC is committed to re-defining itself in terms of our aviation assets, then we must focus on the decisions we make in the future. Most notable are the risks we intend to accept, the training we must conduct, and the expectations of those we empower to utilize this capability. As it is the entirety of our organization that has made, consented, or executed the decisions which have led to this current cross-roads, so it must be a collective effort to dictate the necessary changes. The only thing that stands in our way, is ourselves.

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